# Global and Pervasive Information For Joint Warfighters

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To fight and win our nation's wars, the 21st century U.S. Army must rapidly transform to a net-centric, knowledge-based force focused on strategic and tactical responsiveness and enhanced lethality and survivability.

The global war on terrorism has reinforced our commitment to a force operating along the full spectrum of conflict from humanitarian operations to armed conflict, with the capability to always ensure homeland defense and security. Our global and pervasive information systems will provide leaders with the information they need to make key time-sensitive decisions. Our Army's battlefield success is contingent on the right information reaching the right soldier at the right time.

We have had significant tactical and operational successes in recent deployments in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) in support of the global war on terrorism. We are continually applying lessons learned to keep the Signal Corps relevant, flexible and agile now and into the future. Our Army knowledge management strategy continues to progress as a key element in knowledge superiority.

Our successes have highlighted some essential imperatives for how we will continue to do business. First, we must manage our network operations and security centers (active and reserve component) as a single Army enterprise to exploit synergies and efficiencies from the sustaining base to our deployed tactical networks.

As an enterprise, we must apply our information assurance programs across our strategic, operational and tactical systems as we introduce new systems that leverage the commercial market, and we must begin replacing the aging mobile subscriber equipment system with the suites of equipment in the warfighter information network-tactical (WIN-T).

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Second, we must consolidate current and future capabilities into an Army knowledge enterprise (AKE) as the Army's portion of the global information grid (GIG). The AKE concept focuses on integration and interoperability of processing, storing and transporting information over a seamless network, allowing pervasive access to universal and secure Army information (including business information systems) across tactical, operational and strategic levels. The AKE will provide an "on-the-move" battle command capability by exploiting commercial and military satellite-based networks, providing an uninterrupted flow of information to conventional and unconventional warfighters.

Third, our newly created Network Enterprise Technology Command (NETCOM) is evolving as the Army's global information provider and manager for the entire Army knowledge enterprise—active, Guard and Reserve. NETCOM is designated as the single authority to operate, manage and protect the Army's knowledge enterprise infostructure.

NETCOM ensures consistent operational policy and investments are strategically aligned with the Army's global networking requirements. NETCOM manages and defends the Army's portion of the global information grid, supports the Objective Force, and reduces our total cost of ownership as we build and deploy the Army knowledge enterprise.

Fourth, the growing cyber threat to the global information grid has brought the Army G-2 and G-6 into a synergistic relationship to manage and defend our networks. NETCOM's dynamic role in information management is enhanced by its Army Network Operations and Security Center, which has been co-located with Intelligence and Security Command.

This facilitates and synchronizes the computer network operations and computer network defense missions with the Joint Task Force for Computer Network Operations, the Defense Information Systems Agency, and the 1st Information Operations Command and its Army computer emergency response team.

All six Army theaters now have a network common relevant operational picture. This provides the ANOSC visibility of the health and operational status of each theater's network. In addition, it allows NETCOM to provide a near real-time situational awareness reporting capability to the Army leadership. To ensure the highest state of network readiness, the ANOSC initiates network operations and computer network defense drills Army-wide. Standardizing and honing cyber-warfare techniques, tactics and procedures into an enterprise-managed information delivery system will continue to increase the availability and robustness of our networks.

*Spc. Lamont Bullock, 40th Signal Battalion, configures a heavy contingency communications support package server, in Arifjan, Kuwait. The equipment provides critical communications capabilities to coalition forces involved in Operation Enduring Freedom.*

We have continued to rapidly assimilate our experiences from joint and asymmetrical operations in East Timor, the Balkans, Afghanistan and the campaign in Iraq. The Army of the future will not deploy to conflicts or humanitarian operations alone, but as part of a joint team. During Operation Iraqi Freedom, as in Operation Enduring Freedom in Afghanistan and Uzbekistan, our Army signal soldiers provided communications for the Air Force, Marines and our coalition partners. The extensive data network that linked command and control headquarters at all levels ensured a more rapid sharing of information through a common operating picture that consistently allowed forces to operate inside the enemy's decision cycle. Current operations in Afghanistan and Iraq demonstrated that a net-centric, knowledge-based Army is at the very foundation of the future force and is a significant and profound combat enabler. Interoperability is now not only expected but demanded, in support of joint and combined operations.

Signal support in OEF started with the 112th Special Operations Signal Battalion, followed by the 11th Signal Brigade and elements of 10th Signal Battalion, 501st Signal Battalion and then transitioned to the 35th Signal Brigade. These units conducted their assigned missions almost unnoticed in the shadows of successful coalition combat operations. This remained the case as their support grew for nearly 7,000 joint and coalition customers at Bagram Airfield and 5,000 at Karshi-Karnabad (K2), Uzbekistan.

In OIF operations, more than 9,000 signal soldiers have been deployed to support U.S. Central Command operations, establishing key communications links along the way to provide command and control connectivity both inside and outside the area of operations. These included the 22nd Signal Brigade (Darmstadt, Germany), augmented by the 35th Signal Brigade (Fort Bragg, N.C.), and the 11th Signal Brigade (Fort Huachuca, Ariz.), augmented by elements from 93rd Signal Brigade (Fort Gordon, Ga.) and 5th Signal Command (Mannheim, Germany).

Conventional signal forces will follow special operations signal forces and they must be capable of supporting the enterprise network, regardless of echelon—voice and data, non-secure Internet protocol router (NIPR), secure Internet protocol router (SIPR) and joint worldwide intelligence communications system (JWICS).

One of the most effective and successful efforts demonstrating a transformed Army into a net-centric, knowledge-based force was our employment of the blue force tracking (BFT) capability in support of OEF and OIF. BFT evolved from the Army's Force XXI battle command-brigade and below (FBCB²) program developed in Task Force XXI, and refined in operations in Bosnia and Kosovo. BFT is a FBCB² satellite-based capability on platforms (tanks, armored personnel carriers, infantry fighting vehicles, Apaches, Black Hawks and more). These BFT-enabled platforms transmitted and received battlefield locations, battlefield graphics and overlays, and orders to a central information server system for aggregation and retransmission. This provided a near-real time situational awareness common operating picture of friendly forces on the battlefield to Army, joint and allied forces. Thus BFT allowed our combat forces in Iraq and Afghanistan to have a fully integrated common operating picture beyond line of sight. The satellite capability enhancement allowed forces to operate through sandstorms, night and even extremely long distances. Forces could zoom in and out, seeing troop locations for 10 miles, 20 miles or the en-

tire country of Iraq. Battle command doctrine is being shaped by the ability to have "live" situational awareness while communicating and collaborating on the move through a space-based network.

The success of blue force tracking is the most heralded example of how the Army is transforming itself into a fully net-centric force. The success inspired the Joint Requirements Oversight Council to designate the Army as the lead service to refine joint blue force situational awareness capabilities for the services and special operations forces.

Future Signal operational requirements will consist of SIPR network, NIPR network, voice networks, video-teleconferencing and special circuits (for example, JWICS and red switch). Bandwidth requirements will continue to grow, but today not all signal units are equipped or manned to provide the needed support. For OEF and OIF, 75 percent of all active echelon above corps and 66 percent of corps tactical assets were deployed. Deployments were widely dispersed, creating communication islands that can only be connected into the GIG through satellite communication. This took 72 percent of all Forces Command and 60 percent of all U.S. Army Europe tactical satellite assets. This commitment of Joint Chiefs of Staff-managed and Army assets has created a continued process of commercializing tactical communications sites and freeing tactical units for the next potential deployment. The 11th Signal Brigade and the 335th Theater Signal Command, U.S. Army Reserve, which is currently deployed, are commercializing communications sites and services throughout Southwest Asia. Commercialization in OEF was conducted in K2, Uzbekistan, followed closely with operations at Bagram Airfield in Afghanistan.

Commercialization and expansion of communications continue in Uzbekistan and Afghanistan. To provide the required communications for all recent operations, significant task organizing and modernizing to meet OEF/OIF warfighter requirements have been necessary. The Army has begun a permanent Signal Transformation to address these issues with the Integrated Theater Signal Battalion (ITSB), the largest and most significant organizational change to the Signal Corps in 20 years. The ITSB is a complete, top-to-bottom rewrite of signal doctrine, tactics, techniques and procedures based on lessons learned in OEF, OIF and other recent deployments.

Why are we doing this? While our tactical signal organization and structure with MSE and TRITAC equipment served us well in the Cold War and in Desert Storm, our recent operations demonstrate that we have neither the organization, structure nor equipment to support today's warfighter requirements. Although WIN-T is our future system, in the interim (five to seven years) we must adjust to stay relevant. We are doing this by incorporating transmission, switching and systems-control assets into a single signal unit. Finally, traditional echeloned signal support rules did not apply in either OEF or OIF.

The ITSB will integrate beyond-line-of-sight systems, wide-band data and computer network management capabilities into its design. This alleviates the need for massive

*Sgt. Andrew Topham of the 86th Signal Battalion, troubleshoots a data network at the technical control center for the 11th Signal Brigade at Kandahar, Afghanistan. Sgt. Topham is often called upon to travel to brigade sites located in Afghanistan from his home base at K2 in Uzbekistan.*

*Soldiers erect a troposcatter antenna in Iraq during Operation Iraqi Freedom.*

task organization. The ITSB design provides unity of command in an organization that lives together, trains together in garrison and deploys as a unit or in modular teams. As the blueprint for the tactical signal unit of the future, ITSB is an essential component in Army knowledge management (AKM) strategy.

AKM is our comprehensive strategy to transform the Army into a net-centric, knowledge-based force. This plan is linked and synchronized to incorporate technology and leverage streamlined knowledge processes into the Army at a cultural level.

Army knowledge management contains five overarching goals to create and sustain the Army knowledge enterprise.

While each goal has its own focus, together the goals comprise a systematic approach for creating the Army's future force. In fiscal year (FY) 2002 and 2003, the Army made significant strides in achieving the AKM goals.

■ **Goal 1.** Recognize that successful transformation to a knowledge-based organization requires an Army-wide commitment to providing the necessary policies, cultural shifts and enterprise management processes to enable mission accomplishment at an extremely fast pace.

■ **Goal 2.** Integrate knowledge management concepts and best practices to promote the knowledge-based force. The goal is to transform processes, systems and structures to get the right information to the right people so they can make better and faster decisions. It is also to transform processes to provide real-time, relevant and accurate knowledge from fort and factory to foxhole and leverage best practices in the way we fight and sustain, in order to improve doctrine, tactics, techniques and procedures.

■ **Goal 3.** Seek to manage the infostructure at the enterprise level to provide enhanced capabilities and efficiencies. This will provide our future Army with a net-centric capability that provides "one Army portal," a single sign-on capability for access, a universal directory service for finding individuals and data, and a robust, secure, pervasive global information grid (Army portion) with plug-and-play universal access to information.

■ **Goal 4.** Institutionalize Army knowledge online as the enterprise portal to provide universal, secure access for the entire Army. This will provide the means for everyone in the Army to access required information and to communicate and collaborate together, making the Army stronger than its individual parts. By reducing the number of systems and people required at forward deployed locations, the force on the ground can move faster to securing its objectives.

■ **Goal 5.** Pursue strategies to instill dedication, cultivate leadership and create a quality workforce by harnessing human capital for the knowledge organization. The goal is to use intellectual assets and empower the Army through effective workforce planning, innovative recruitment and retention strategies, broad-based education and training programs and cross-functional professional development opportunities. By providing Army professionals with a global perspective, enabling them to embrace and lead change and making them adaptable to new environments and new ways of doing business, the Army will become a learning organization.

With the reorganization of Headquarters, Department of the Army, and the creation of NETCOM, the Army chief information officer/G-6's mission to transform Army information management is well under way. Resourcing the information management transformation remains a significant challenge, and educating the Army to embrace cultural change is the key to success. The AKM strategic goals are in concert with the DoD's network-centric operational warfare reference model announced in FY 2003. While we continue to support OEF and OIF, we are also swiftly forging ahead to institute best business practices and to manage our infostructure at the enterprise level. NETCOM plays an essential role as a global communication provider and manager for the entire Army knowledge enterprise—active, Guard and Reserve. All this adds up to creating a net-centric, knowledge-based force enabling information superiority and battle command to increase the combat power necessary to quickly win our nation's wars.

We are going to be very busy. We have a huge task to provide the right information to the right person at the right time, but I am confident that we are on the right track. We must reshape our Signal forces, restructure our Signal equipment, consolidate our networks into a single enterprise and provide bridging communication capabilities until we see WIN-T and FCS networks are a reality. It will take innovative leadership, continual engagement and good communications within our regiment. Our soldiers, civilians and contractors have proven in every operation that we are up to the task.